PE TITLE: Conventional Weapons Technology

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1999

BUDGET ACTIVITY

PE NUMBER AND TITLE

3 - Advanced Technology Development

0603601F Conventional Weapons Technology

				•					<u> </u>		
COST (\$ In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	22,406	22,791	21,479	22,077	21,792	23,880	24,479	25,088	Continuing	Continuing	
670A Ordnance Technology	8,724	9,786	11,263	11,882	10,205	10,177	10,701	11,758	Continuing	Continuing	
670B Guidance Technology	13,682	13,005	10,216	10,195	11,587	13,703	13,778	13,330	Continuing	Continuing	
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0	

- (U) A. <u>Mission Description</u>: This Advanced Technology Development program develops and demonstrates conventional weapons technologies including advanced guidance and ordnance technologies for conventional weapons. This program includes development of: (1) conventional ordnance technologies, including warheads, fuzes, explosives, munition integration, and lethality and vulnerability assessments; and (2) advanced guidance technologies, including seekers, navigation and control, signal and image processing/algorithms, and simulation assessments for low-cost precision and adverse weather autonomous seekers for use on manned and unmanned aerospace vehicles. Payoff from this program is increased warhead penetration effectiveness, enhanced blast and fragmentation weapons, and precision fuze control for increased probability of target kill; and precision terminal guidance and the capability to operate autonomous weapons in adverse weather.
- (U) B. <u>Budget Activity Justification</u>: This program is in the Budget Activity 3, Advanced Technology Development, since it develops and demonstrates technologies for existing system upgrades and/or new system developments that have military utility and address warfighter needs.

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Exhibit R-2 (PE 0603601F)

UDGET ACTIVITY 3 - Advanced Technology Development U) C. Program Change Summary (\$ in Thousands):		PE NUMBER AN 0603601F			February 1999
		0603601F	Convention		
U) C. <u>Program Change Summary (\$ in Thousands)</u> :			OOMVCHILION	nai weapons	Technology
					Total
	FY 1998	FY 1999	FY 2000	FY 2001	Cost
U) Previous President's Budget/FY 1999 PB	21,622	23,244	23,983	23,848	Cont
U) Appropriated Value	24,687	23,244			
U) Adjustments to Appropriated Value					
a. Congressional/General Reductions	-1,072	-453			
b. SBIR	-468				
c. Omnibus/Other Above Threshold Reprogrammings	-147				
d. Below Threshold Reprogrammings	-594				
U) g. Adjustments to Budget Years Since FY 1999 PB			-2,504	-1,771	
U) Current Budget Submit/FY 2000 PB	22,406	22,791	21,479	22,077	Cont
FY 1999: \$685 identified as a source for SBIR.					
		ge 2 of 11 Pages			hibit R-2 (PE 0603601F)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)								February 1999		
				NUMBER AND 603601F (onal Wea	pons Ted	chnology		70A
COST (\$ In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate		FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
670A Ordnance Technology 8,724 9,786 11		11,26	11,882	10,205	10,177	10,701	11,758	Continuing	Continuing	

(U) A. <u>Mission Description</u>: This project develops and demonstrates the operational effectiveness and utility of conventional (non-nuclear) ordnance technologies for current and future weapons delivered from manned and unmanned aerospace vehicles. The project includes development of conventional ordnance, including warheads, fuzes, explosives, sensitive explosives; hard target warheads; bombs, submunitions, and their dispensing mechanisms; weapon airframes and carriage; smart submunitions; munition integration; and lethality and vulnerability assessments.

(U) <u>FY 1998</u> (\$ in Thousands):

- (U) \$4,297	Developed and demonstrated advanced conventional armament warhead technologies, including heavy metal liners, less sensitive, high
	blast penetrator explosives, dense metal warhead cases, fragmentation of thick-walled penetrators, advanced warhead shapes for improved
	penetration, improved warhead metals and design for high impact loading, and directional mass focus warheads. Advanced warhead
	technologies will provide better target penetration capabilities, enhanced kill probability against fragmentation sensitive targets.
- (U) \$1,108	Developed and demonstrated advanced conventional armament fuze technologies, including hard target penetration, low-cost proximity for
	surface targets, and target imaging detection devices for air target defeat.
- (U) \$3,319	Integrated advanced conventional armament technologies, including innovative aerospace vehicle carriage and release equipment, release
	concepts for small weapons, compact fin folding and deployment mechanisms, and compact airframe design and subsystem integration.
	Munition integration technologies will provide the capability of multiple carriage of small weapons, and allow communication between the
	aerospace vehicle and the weapons.
- (U) \$8,724	Total

Project 670A Page 3 of 11 Pages Exhibit R-2A (PE 0603601F)

RD	nibit) DATE Februa	ary 1999		
UDGET ACTIVITY 3 - Advanced Tec	hnology Development	PE NUMBER AND TITLE 0603601F Conventi	onal Weapons Technology	PROJECT 670A
(U) <u>FY 1999</u> (\$ in	Thousands):			
- (U) \$3,418	Develop and demonstrate advanced convent penetrator explosives, dense metal warhead penetration, improved warhead metals and of technologies will provide better target penet	cases, fragmentation of thick-walled plesign for high impact loading, and di	penetrators, advanced warhead shapes for in rectional mass focus warheads. Advanced	mproved warhead
- (U) \$1,974	Develop and demonstrate advanced convent surface targets, and target imaging detection	<u> </u>	cluding hard target penetration, low-cost pr	oximity for
- (U) \$4,100	Integrate advanced conventional armament concepts for small weapons, compact fin for Munition integration technologies will provaerospace vehicle and the weapons.	technologies, including innovative aed ding and deployment mechanisms, ar	nd compact airframe design and subsystem	integration.
- (U) \$294	Identified as a source for SBIR.			
- (U) \$9,786	Total			
- (U) \$5,387 - (U) \$2,171	penetrator explosives, dense metal warhead cas penetration, improved warhead metals and desi technologies will provide better target penetration. Develop and demonstrate advanced convention targets, and target imaging detection devices for Integrate advanced conventional armament technologies for small weapons, compact fin foldin Munition integration technologies will provide aerospace vehicle and the weapons.	gn for high impact loading, and direction capabilities, enhanced kill probabilities al armament fuze technologies, includor air target defeat. Innologies, including innovative aerospag and deployment mechanisms, and company the company to the co	tional mass focus warheads. Advanced was ility against fragmentation sensitive targets ding hard target penetration, low-cost proxi- pace vehicle carriage and release equipment compact airframe design and subsystem into	rhead . mity for surfact, release egration.
- (U) \$11,263	Total			
roject 670A		Page 4 of 11 Pages	Exhibit R-2A (PE 0603	8601F)

RDT	&E BUDGET ITEM JUSTIFIC	DATE Februa	ary 1999	
oget activity - Advanced Tech	nology Development	PE NUMBER AND TITLE 0603601F Conventional	Weapons Technology	PROJEC 670A
(U) <u>FY 2001 (\$ in T</u>				
- (U) \$4,003	penetrator explosives, dense metal warhe penetration, improved warhead metals an	entional armament warhead technologies, inclu ad cases, fragmentation of thick-walled penetra d design for high impact loading, and direction netration capabilities, enhanced kill probability	ators, advanced warhead shapes for in all mass focus warheads. Advanced	mproved warhead
- (U) \$5,990		entional armament fuze technologies, including		
- (U) \$1,889	Integrate advanced conventional armame concepts for small weapons, compact fin	nt technologies, including innovative aerospace folding and deployment mechanisms, and com ovide the capability of multiple carriage of sma	pact airframe design and subsystem i	integration.
- (U) \$11,882	Total			
oject 670A		Page 5 of 11 Pages	Exhibit R-2A (PE 0603)	601F)

RDT&E BUDGET ITEM JUSTIFICATION	February 1999	
3 - Advanced Technology Development	PE NUMBER AND TITLE 0603601F Conventional Weapons T	echnology 670A
(U) B. Project Change Summary - Description of Significant Changes: Not Ap	oplicable.	
 (U) Related Activities: (U) PE 0602602F, Conventional Munitions. (U) PE 0602111N, Anti-Air/Anti-Surface Warfare Technology. (U) PE 0603792N, Advanced Technology Demonstrations. (U) PE 0604407D, Joint Standoff Weapon. (U) This project has been coordinated through the Reliance process to had (U) D. Acquisition Strategy: Not Applicable. (U) E. Schedule Profile: Not Applicable. 	armonize efforts and eliminate duplication.	
Project 670A Page	6 of 11 Pages Exhi	bit R-2A (PE 0603601F)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)									February 1999		
BUDGET ACTIVITY 3 - Advanced Tech	nology Developme	nt			JMBER AND 1 03601F C		onal Wea	pons Ted	hnology		ROJECT 70B
COST (\$	in Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
670B Guidance Technology		13,682	13,005	10,216	10,195	11,587	13,703	13,778	13,330	Continuing	Continuin
(U) FY 1998 (\$ in T - (U) \$6,504 - (U) \$2,964 - (U) \$4,214 - (U) \$13,682	housands): Developed and demons aperture radar, and confautonomously detect, as Developed and demons vector estimators, autor technologies will providenvironment. Integrated advanced contechnologies, laser radatechniques, and demons weather performance, findse alarm rate. Total	trated adva formal seek cquire, and trated adva bilots, inert de increase nventional ar algorithm strated adva	anced converted arrays for a guide to tare anced converted armament guidance tens, super resulted anced converted anced converted anced converted anced converted armament guidance tens, super resulted anced converted anced	ntional arma r multi-mod gets of inter ntional arma on, aerodyna navigation chnologies i olution tech	ament seeker le application rest in advers ament naviga amic control, accuracy and including see niques for mament guida	technologiens. These afte weather contion and cortain and anti-jand enhanced vekers, navigatillimeter wance capabilit	s, including fordable see onditions what rol technol n global posweapon contation and conves and synies. This gu	laser radar, ker technolo nile increasin ogies, includi itioning syst rol and oper ntrol, signal thetic apertu nidance capa	millimeter w gies will pro g probability ling weapon em techniqu ation in a ele and image pare radar, opt bility will pr	vave, synthet vide the cap v of kill. guidance laves. These extronic jamirocessing/algical processiovide better	ability to ws, state ming gorithm ng adverse

	DATE	
		February 1999
BUDGET ACTIVITY	PE NUMBER AND TITLE	
3 - Advanced Technology Development	0603601F Conventional Weapons Technology	ogy

			DATE February 1999
GET ACTIVITY		PE NUMBER AND TITLE	•
Advanced Ted	hnology Development	0603601F Conventional V	Veapons Technology
(U) <u>FY 1999</u> (\$ in		•	
- (U) \$7,823	radar and conformal seeker arrays for mu	ventional armament seeker technologies, including ulti-mode applications. These affordable seeker to targets of interest in adverse weather condition	echnologies will provide the capability to
- (U) \$1,002	Develop and demonstrate advanced conv vector estimators, autopilots, inertial nav	ventional armament navigation and control techno vigation, aerodynamic control, and anti-jam global ament navigation accuracy and enhanced weapon	ologies, including weapon guidance laws, state l positioning system techniques. These
- (U) \$3,789	Integrate advanced conventional guidance technologies, laser radar algorithms, sup techniques, and demonstrated advanced	ce technologies including seekers, navigation and her resolution techniques for millimeter waves and conventional armament guidance capabilities. The of target information, higher probability of target of	I synthetic aperture radar, optical processing as guidance capability will provide better adverted.
- (U) \$391	Identified as a source for SBIR.		
- (U) \$13,005	Total		
(-) 1			
(U) FY 2000 (\$ in	Thousands):		
- (U) \$2,699	radar and conformal seeker arrays for multi-	tional armament seeker technologies, including la -mode applications. These affordable seeker techn targets of interest in adverse weather conditions w	nologies will provide the capability to
- (U) \$1,438	estimators, autopilots, inertial navigation, ac	tional armament navigation and control technolog erodynamic control, and anti-jam global positioning uracy and enhanced weapon control and operation	ng system techniques. These technologies will
- (U) \$6,079	technologies, laser radar algorithms, super r techniques, and demonstrated advanced con	echnologies including seekers, navigation and corresolution techniques for millimeter waves and synventional armament guidance capabilities. This garget information, higher probability of target determined.	nthetic aperture radar, optical processing guidance capability will provide better adverse
- (U) \$10,216	Total		

RDT&E BUDGET ITEM JUSTIFICATION	DATE Februar	y 1999	
BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603601F Conventional Weapons	Technology	PROJECT 670B
	_		
Project 670B Page	e 8 of 11 Pages Ex	hibit R-2A (PE 060360	J1F)

R	DT&E BUDGET ITEM JUSTIFI	-	nibit) DATE Februa	ry 1999
UDGET ACTIVITY 3 - Advanced T	echnology Development	PE NUMBER AND TITLE 0603601F Convention	onal Weapons Technology	PROJECT 670B
(U) <u>FY 2001 (\$</u> – (U) \$2,570	in Thousands): Develop and demonstrate advanced conver radar and conformal seeker arrays for mult autonomously detect, acquire, and guide to	i-mode applications. These affordable seek	ker technologies will provide the capability	
- (U) \$2,782	Develop and demonstrate advanced conver estimators, autopilots, inertial navigation, a provide increased armament navigation acc	ntional armament navigation and control tea aerodynamic control, and anti-jam global p	echnologies, including weapon guidance lavositioning system techniques. These techniques.	ologies will
- (U) \$4,843	Integrate advanced conventional guidance technologies, laser radar algorithms, super techniques, and demonstrated advanced co	technologies including seekers, navigation resolution techniques for millimeter waves nventional armament guidance capabilities	and control, signal and image processing/	algorithm essing tter adverse
- (U) \$10,195	Total			

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		February 1999
BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603601F Conventional Weapons Te	echnology 670B
 (U) C. Other Program Funding Summary: (U) Related Activities: (U) PE 0602111N, Anti-Air/Anti-Surface Warfare Technology. (U) PE 0603792N, Advanced Technology Demonstrations. (U) PE 0604618F, Joint Direct Attack Munitions. (U) This project has been coordinated through the Reliance process to had (U) D. Acquisition Strategy: Not Applicable. (U) E. Schedule Profile: Not Applicable. 	armonize efforts and eliminate duplication.	
Project 670B Page	10 of 11 Pages Exhib	it R-2A (PE 0603601F)

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